conversion of the data and wherein the converting of the data includes converting the data of the output type resulting from the last conversion of the data using each of the newly identified routines.

58.   (New) The computer system of claims 50 wherein the identification of routines is terminated when the output type of an identified routine matches a target type of the received data.

REMARKS

Applicants have added claims 19-58 in order to clarify the subject matter of their invention. Thus, claims 1-58 are now pending.

Claims 19-43 are similar to the claims currently pending in the PCT. The attached International Preliminary Examination Report ("IPER") indicates that the PCT claims satisfy the novelty and inventive steps requirements for patentability.

Applicants respectfully request consideration of this application and its early allowance.

Respectfully submitted,
Perkins Coie LLP

Maurice J. Pirio
Registration No. 33,273

Enclosures:
    International Preliminary Examination Report

P.O. Box 1247
Seattle, Washington 98111-1247
(206) 583-8888
Fax: (206) 583-8500

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PCT 1278-034/ld	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/US99/09829	International filing date *(day/month/year)* 04/05/1999	Priority date *(day/month/year)*

International Patent Classification (IPC) or national classification and IPC G06F17/30

Applicant BECOMM CORPORATION et al.

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

    ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

    These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

    I   ☒ Basis of the report
    II   ☐ Priority
    III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
    IV   ☐ Lack of unity of invention
    V   ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
    VI   ☐ Certain documents cited
    VII ☒ Certain defects in the international application
    VIII ☐ Certain observations on the international application

Date of submission of the demand 01/12/2000	Date of completion of this report 30.07.2001
Name and mailing address of the International preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Mengele, S Telephone No. +49 89 2399 2720

INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

International application No.   PCT/US99/09829

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)):*
Description, pages:

1-25	as originally filed

Claims, No.:

1-25	as received on	17/07/2001	with letter of	17/07/2001

Drawings, sheets:

1/24-24/24	as originally filed

2. With regard to the **language,** all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description,   pages:

   ☐ the claims,   Nos.:

INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

International application No. PCT/US99/09829

☐   the drawings,   sheets:

5. ☐   This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-25
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-25
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-25
	No:	Claims	

2. Citations and explanations
   see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

INTERNATIONAL PRELIMINARY   International application No.   PCT/US99/09829
EXAMINATION REPORT - SEPARATE SHEET

1.   **ad section V:**

1.1   Method claim 1 and independent apparatus claim 14 specify that data is
converted from a source type to a target type by a sequence of routines that is
identified **after** the source type data is received, so that the present invention is
based on a **dynamic** data conversion. That is, in the present invention the
sequence of routines is not predefined but dynamically determined when data of
source type is received and must be converted into data of a target type.

US-A-5,710,917 describes automatic generation of a data mapping from a first
data format in a source database to a second format in a target database. A pre-
existing first data mapping from the source database to an intermediate databse
and a pre-existing second data mapping from the intermediate database to the
target database are retrieved and a third data mapping from the source database
tot he target database is automatically derived based upon said first and second
data mappings. While the process of generating the sequences of data mappings
is automated, that prior art contrasts with the present invention in that the data
mappings are **static**, i.e. all the possible sequences of data mappings are
predefined before any data is received or processed.

The prior art known from EP-A-0 408 132 does not suggest to automatically and
dynamically identify a sequence of converters as claimed, but describes that all
target formats available from a source format both with single converters and with
combinations of converters are searched and displayed so that the user can
select one of the target formats.

1.2   Dependent Claims 2 to 13 and 15 to 25 specify embodiments of the subject-
matter of the independent claim to which they refer respectively.

2.   **ad section VII:**

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art
disclosed in document US-A-5,710,917 is not mentioned in the description, nor is
this document identified therein.

Application No: PCT/US99/09829
Applicant: BECOMM CORPORATION, et al.
Our ref: PCT1278-03481/ot
Date: July 17, 2001

Claims

1. A method in a computer system for converting data of a source type to a target
    type, the method comprising:

    providing a plurality of routines, each routine having an input type and an output
    type;

    receiving the data to be converted, the data being of the source type; and

    after receiving the data,

    identifying a routine whose input type matches the source type;

    converting the data of the source type to the output type of the identified routine
    using the identified routine; and

    until no more routines can be identified,

    identifying a routine whose input type matches the output type resulting from
    the last conversion of the data; and

    converting the data of the output type resulting from the last conversion of the
    data using the newly identified routine.

2. The method of claim 1 wherein an input type matches an output type when an
    identifier of the input type and the output type are the same.

3. The method of claims 1-2 wherein a type has an alias identifier and wherein the
    type matches another type when the alias identifier and an identifier of the other
    type are the same.

4. The method of claims 1-3 wherein the identifying of a routine includes identifying
    multiple routines whose input type matches the output type for the last conversion

————— AMENDED SHEET

of the data and wherein the converting of the data includes converting the data of the output type resulting from the last conversion of the data using each of the newly identified routines.

5. The method of claim 4 wherein the identified routines form a tree-like arrangement of organization of routines.

6. The method of claims 1-5 including terminating the identification of routines when the output type of an identified routine matches the target type.

7. The method of claims 1-6 including caching an indication of the identified routines so that, when data of the source type to be converted to the target type is subsequently received, the data can be converted without re-identifying the routines.

8. The method of claims 1-7 including storing in a cache an indication of a sequence of routines for converting data from the source type to the target type so that, when data of the source type to be converted to the target type is first received, the data can be converted using the sequence of routines indicated in the cache without identifying routines.

9. The method of claims 1-8 including storing in a cache an indication of a sequence of routines for converting data from an input type so that, when data is converted from the input type, the data can be converted using the sequence of routines indicated in the cache without identifying the routines of the sequence.

10. The method of claims 1-9 wherein when the target type is known, identifying a sequence of routines to convert the data from an input type to the target type prior to converting the data using any of the routines in the identified sequence.

11. The method of claim 10 including, after identifying the sequence of routines, converting the data to the target type using the routines in the identified sequence.

12. The method of claims 1-11 wherein a routine provides its output type only after converting data.

13. The method of claims 1-12 wherein a routine sends its converted data of its output type to a forwarding component that identifies a routine and invokes the identified routine to convert the data.

———— AMENDED SHEET

14. A computer system for converting data, comprising:

a plurality of routines, each routine having an input type and an output type;

a component that receives data to be converted, the data being of a source type; and

a component that, after receiving the data, identifies a sequence of routines whose output types match the input types of the next routine in the sequence and converts the data of the source type using the identified sequence of routines.

15. The computer system of claim 14 wherein the data is converted using an identified routine before identifying the next routine in the sequence.

16. The computer system of claims 14-15 wherein an input type matches an output type when an identifier of the input type and the output type are the same.

17. The computer system of claims 14-16 wherein a type has an alias identifier and wherein the type matches another type when the alias identifier and an identifier of the other type are the same.

18. The computer system of claims 14-17 wherein the identifying of a routine includes identifying multiple routines whose input type matches the output type for the last conversion of the data and wherein the converting of the data includes converting the data of the output type resulting from the last conversion of the data using each of the newly identified routines.

19. The computer system of claim 18 wherein the identified routines form a tree-like arrangement of organization of routines.

20. The computer system of claims 14-19 wherein the identification of routines is terminated when the output type of an identified routine matches a target type of the received data.

21. The computer system of claims 14-20 including caching an indication of the identified routines so that, when data of the source type to be converted is subsequently received, the data can be converted without re-identifying the routines.

22.   The computer system of claims 14-21 including storing in a cache an indication of a
      sequence of routines for converting data from the source type to a target type so
      that, when data of the source type to be converted to the target type is first
      received, the data can be converted using the sequence of routines indicated in the
      cache without identifying routines in the sequence.

23.   The computer system of claims 14-22 including storing in a cache an indication of a
      sequence of routines for converting data from an input type so that, when data is
      converted from the input type, the data can be converted using the sequence of
      routines indicated in the cache without identifying routines in the sequence.

24.   The computer system of claims 14-23 wherein a routine provides its output type
      only after converting data.

25.   The computer system of claims 14-24 wherein a routine sends its converted data of
      its output type to a forwarding component that identifies a routine and invokes the
      identified routine.